Integrated Design Capability / Instrument Design Laboratory

Ocean Color Experiment Ver. 2 (OCE2)

~ Kickoff Presentation ~

Opening Remarks

Tammy Brown

April 27, 2011

Presentation Agenda

Ocean Color Experiment Version 2 (OCE2) Agenda for Friday, April 27, 2012				
	Topic	Presenter	Planned Duration	Planned Start Time
1	Introduction	Tammy Brown	0:15	9:30 AM
2	Systems Overview	Scott Appelbaum	0:25	9:45 AM
3	Mechanical Systems	Eduardo Aguayo	0:20	10:10 AM
4	Electrical	Kenda Newton	0:20	10:30 AM
5	Flight Software	Kequan Luu	0:15	10:50 AM
6	Radiometry	Jay Smith	0:25	11:05 AM
7	Mechanisms	Dick McBirney	0:25	11:30 AM
	Lunch Break	~	1:00	11:55 AM
	Announce Door Prize Winners!			
8	Optical Performance	Peter Hill	0:20	1:00 PM
9	Thermal	Mike Choi	0:20	1:20 PM
10	Systems Summary	Martha Chu & Scott Appelbaum	0:15	1:40 PM
11	Closing Remarks	Tammy Brown	0:10	1:55 PM
	if there's time, we may be able to present detectors			
			Conclusion	2:05 PM

General Reminders

- **The concept presentations we present today are still a work in progress**
  - Mass results are preliminary, as we will finalize the mass model collaboratively on Monday, April 30
  - We will identify small discrepancies as this is the first opportunity we have as a team to see everyone's body of work, and we work to reconcile those today and at our wrap-up meeting
  - I will summarize the significant actions we need to take to reconcile our conceptual point design and to review all non-parametric cost estimates during Closing Remarks
- **Mass model should be ready for costing by COB Thursday, May 2**
  - At that point we need all of purchase cost estimates
- **Cost results will be available NET Friday,**
  - Costing starts when the mass model is complete, and are available approximately 10-12 business days following the study
- **The final report is provided following the cost presentation**

IDL Products List

Integrated Design Capability / Instrument Design Laboratory

At this time, no study products have been identified as "at risk" products that could be unavailable, of lower quality, or inconsistent with the rest of the design

Instrument-Specific Conceptual Design
Consistently Represented Across All Subsystems

- Notional instrument block diagram
- Point Design Summary (PDS) spreadsheet to summarize final instrument configuration
- Recommendations for a calibration approach
- Detector assessment
- Mechanism definition
- Mechanical model
- Optical model
- Thermal model
- Electrical Architecture & flight software approach
- Mass model (a.k.a. master equipment list (MEL))
- Parametric cost product
- Structural analysis, if there is sufficient mechanical fidelity

We produce a single baseline configuration for costing

Alternative recommendations may be documented in subsystem presentations

IDL Products List

Integrated Design Capability / Instrument Design Laboratory

At this time, no specific study products have been identified as "at risk" for being unavailable, of lower quality, or inconsistent with the rest of the design. However, we will be working beyond our internal wrap-up day to completely reconcile all our presentations with the mass model.

Instrument-Specific Conceptual Design
Consistently Represented Across All Subsystems

- Systems summary of changes implemented, trades considered, and future recommendations
- Notional instrument block diagram
- Point Design Summary (PDS) spreadsheet to summarize final instrument configuration
- Detector assessment
- Cryo design
- ADR design
- Mechanism definition
- Mechanical model
- Thermal model
- Electrical architecture & flight software approach
- Reliability assessment
- Micrometeorite assessment
- Mass model (a.k.a. master equipment list (MEL))
- Parametric cost product

We produce a single baseline configuration for costing

Alternative recommendations will be documented in subsystem presentations

General Reminders for our Final Product

- **The IDL Team is responsible for safeguarding all technical details about the study by limiting distribution to the study team or resources in their branch that they may need to consult with.**
  - Please be mindful of taking any hard copies of customer documents from the room during the study, and to shred any hard copies at the conclusion of the study.
- **Capture all of the design drivers that influenced the final concept**
  - These will be particularly important to customers that experience changes in the mission after the study
    - Document design drivers and decisions relative to your subsystem
      - Options that were not investigated because they are not suitable (and why)
      - Options that could be viable, but were not investigated because we ran out of time, or it was not a solution that we were certain we could implement in a week
- **Document technology advances that would have improved the instrument performance or diminished a tall pole in the design**
  - This would address technology that is currently too immature, that may be considered later if that technology becomes necessary to bring the design back in the box, or if the customer team experiences schedule delays and can entertain contingency plans

Scope of Work

- ✓ **Primary Objective: realize a mechanical layout for the stationary and rotating optical components and calibration sources for the OCE2 instrument**
  - The optical model is currently broken up into two halves
  - Consider the mechanisms and calibration approach from the IDL's 2006 GOCECP study, including the momentum compensation feature for scanning axis
- ✓ **Incorporate fiber optic feed to the focal plane**
  - Recommend an appropriate detector and electrical readout approach
  - Realize a housing and temperature control for the detectors
  - Minimize the curvature in the fiber feed
- ✓ **Realize an electrical architecture and instrument processing capability consistent with the mission class and lifetime**
  - Realize electrical hardware and processing capability to control all instrument functions
  - Estimate instrument power needs for average, peak, and survival cases
  - Document electrical interface assumptions and estimate harness mass
  - Estimate telemetry rates and the required S/C data storage
- ✓ **Model the thermal environment and recommend the thermal control hardware**
  - Our mechanical model will show the required radiator sizes
  - Mass model will capture the mass for blankets and redundant operational and survival heaters, thermistors, and heater control circuits

We Value Your Feedback

Please fill out our customer comment cards:

What worked well this week in performing the study?

Is there anything we can improve?

Would you like to recognize anyone that made an outstanding contribution to the success of your study?

IDL Team

- Detectors – Carl Kotecki
- Electrical – Kenda Newton
- Flight Software – Kequan Luu
- Mechanical Designer – Dave Palace
- Mechanical Systems – Eduardo Aguayo
- Mechanisms – Dick McBirney
- Optical Systems – Peter Hill
- Parametric Costing* - Sharon Seipel & Sanjay Verma
- Structural Analysis* - Jeff Bolognese
- Systems – Scott Appelbaum & Martha Chu
- Team Lead – Tammy Brown
- Thermal – Mike Choi
- *Facilitators & IT Support – Carlos Dutan, Dawn Cathers & Henry Cao*

Consultants:

- Fiber Optics: Melanie Ott & Joe Thomes/562
- Mechanisms Control: Ken Lee/544
- Reliability: Aron Brall/300

New to the IDL

*these results will be presented at a later date as this analysis does not begin until the week following your study